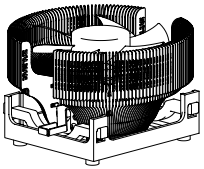
# User's Manual

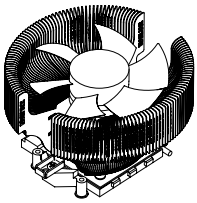
(English version)

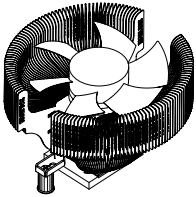
ZALMAN



Intel Pentium 4
Socket 478 CPU
Socket 775 CPU (ZM-CS1 separate purchase necessary)

AMD Duron/Athlon/Athlon XP/Sempron
Socket 462 CPU





AMD Sempron/AMD64 (Athlon 64/Opteron)
Socket 754/939/940 CPU

## CNPS7000B

*** Applies to all versions of CNPS7000B LED.**
*** Please read before installation.**

http://www.zalman.co.kr http://www.zalmanusa.com

## 1. Features

1) Does not generate noise or vibration in Silent Mode.
2) Pure copper and/or pure aluminum base materials ensure excellent heat dissipation.
3) Intel Pentium 4 (Socket 478), AMD Duron / Athlon / Athlon XP / Sempron (Socket 462), and Sempron / AMD64 (Socket 754/939/940) compatible design for broad compatibility. (To use this product on socket 775, ZM-CS1 must be purchased separately.)
4) 92mm fan inside the FHS maximizes airflow and makes installation easier.
5) The high intensity blue LEDs on CNPS7000B LED coolers stay bright even in Silent Mode.
6) Adjustable fan speed controller (FAM MATE 2) enables control of noise and fan performance.

## 2. Specifications

### 1) Flower Heatsink (FHS)

| Spec. \ Model | | CNPS7000B-AlCu | CNPS7000B-Cu |
|---|---|---|---|
| Weight (g) | | 438(1) | 755(1) |
| T.R. (°C/W) | Silent Mode | 0.29 | 0.27 |
| | Normal Mode | 0.22 | 0.20 |
| Dimensions (mm) | | 109 (L) X 109 (W) X 62 (H) | |
| Dissipation Area (㎠) | | 3,154 | |

### 2) Fan

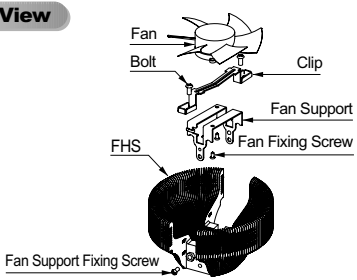
- Bearing Type : 2-Ball
- Rotation Speed : 1,350 ~ 1,800rpm ± 10% (Silent Mode)
  1,800 ~ 2,600rpm ± 10% (Low-noise Mode)
- Noise Level : 18 ~ 21dB ± 10% (Silent Mode) - measured at 1m distance from noise source
  21 ~ 27.5dB ± 10% (Low-noise Mode) - measured at 1m distance from noise source

### 3) FAN MATE 2

- Output Voltage : 5V ~ 11V ± 2%
- Allowable Power : 6W or lower

**Note 1)** The maximum weight for a cooler is specified as 450g for Intel Socket 478/775 and AMD Socket 754/939/940 and 300g for AMD Socket 462. Special care should be taken when moving a computer equipped with a cooler which exceeds the relevant weight limit. Zalman is not responsible for any damage that occurs when moving a computer.

## 3. Exploded View



## 4. Patents

- ❖ Korean Patent Application No. 00-54635
- ❖ Korean Design Applications Nos. 02-17470, 02-25208, 02-25209 etc.
- ❖ Patent Applications pending in over 20 nations around the world, including USA, EU, and Japan

## Precautions

1) If excessive force is exerted on the fan, it may malfunction and result in damage to the product and/or the computer.

2) Do not put your finger in the fan while it is running.

3) Keep the product away from children.

4) Check the components list and condition of the product before installing. If there is any problem, contact the shop where you purchased it and get a replacement or refund.

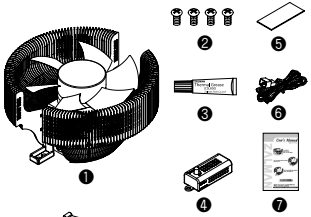
5) The exposed core of a Socket 462 CPU can be cracked if proper care is not taken. Read the "Installation" section thoroughly before installing.

**NOTICE)** Zalman Tech Co., Ltd. is not responsible for any damages due to external causes, including but not limited to, improper use, problems with electrical power, accident, neglect, alteration, repair, improper installation, or improper testing.

## 5. Components

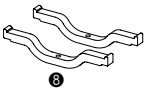
1) Common Components

- ❶ FHS Assembly (CNPS7000B-AlCu/Cu)
- ❷ Four (4) Bolts (for installing the FHS)
- ❸ Thermal Grease
- ❹ Fan Speed Controller (FAN MATE 2)
- ❺ Double - sided Tape (for installing FAN MATE 2)
- ❻ Cable for FAN MATE 2
- ❼ User's Manual (in English and Korean)



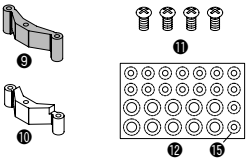
2) Components for Intel Pentium 4 (Socket 478)

- ❽ Two (2) Clip Supports For Socket 478



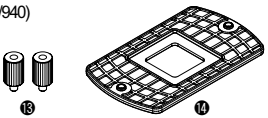
3) Components for AMD Duron / Athlon / Athlon XP / Sempron (Socket 462)

- ❾ One (1) A-Type (blue) Clip Support for Socket 462
- ❿ One (1) B-Type (white) Clip Support for Socket 462
- ⓫ Four (4) Bolts (for fastening the Clip Supports)
- ⓬ One (1) set of Washers



4) Components for AMD Sempron / AMD64 (Socket 754/939/940)

- ⓭ Two (2) Nipples
- ⓮ One (1) Backplate for AMD64
- ⓯ Small washers (from component ⓬)



## 6. Compatible CPUs

**1) Intel Pentium 4 - Socket 478/775**

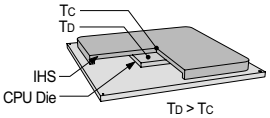
All CPUs conforming to Socket 478 & all CPUs conforming to Socket 775 up to model 540

***Notes)***

3.4GHz Northwood, Prescott-478 of 2.8A/E GHz or higher, and Prescott-775 of up to model 540 generate exorbitant amount of heat (84W ~ 103W). Refer to the table below and adjust the fan speed so that the CPU-Case temperature ($T_C$) is lower than the maximum CPU-Case temperature ($T_{C\_MAX}$).

| CPU | Northwood | Prescott - 478 | | Prescott - 775 |
|---|---|---|---|---|
| | 3.4 | 2.8A/E, 3.0E | 3.2E, 3.4E | 520, 530, 540 |
| $T_{C\_MAX}$ | 68℃ | 69.1℃ | 73.2℃ | 67.7℃ |

※ Hardware monitoring programs report CPU-Die temperature ($T_D$) as the CPU temperature. CPU-Die temperature ($T_D$) is measured about 4 ~ 10℃ higher than CPU-Case temperature ($T_C$) depending on the motherboard and/or BIOS. Refer to the Zalman website for more information.




※ To use this product on Socket 775, ZM-CS1 (clip support for Socket 775) must be purchased separately.

***Cautions )***

① For Socket 478, as shown in Figure 2, a motherboard that is not compliant with the "10.2mm Motherboard component height restriction" standard, introduced by Intel, may create interference between components and the clip. Please do not install the CNPS7000B if this interference is observed.

② No motherboard components with a height greater than 39mm, as well as the PSU, disk drives, VGA card, and RAM should be present within a 55 mm radius from the center of the CPU.

③ For more information, please visit the Zalman website and click on "Compatibility between CNPS7000(A/B) and Socket 478 Pentium 4 Motherboards" link.

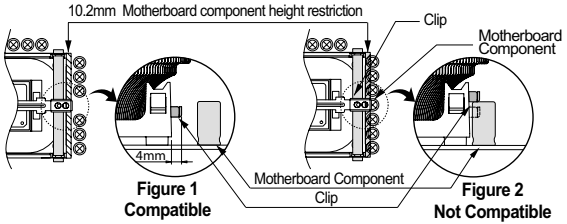



**Figure 1 Compatible** **Figure 2 Not Compatible**

**2) AMD Duron / Athlon / Athlon XP / Sempron - Socket 462**

All CPUs conforming to Socket 462 platform

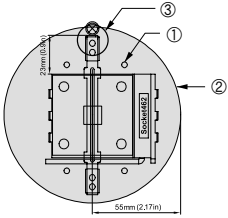
***Cautions )***

① This product requires "Heatsink Attach Holes" around the CPU socket as shown on the right.

② No motherboard components with a height greater than 39mm, as well as the PSU, disk drives, VGA card, and RAM should be present within a 55 mm radius from the center of the CPU.

③ This product cannot be installed if any motherboard component (usually capacitor) taller than 15mm is located under the clip.

④ For more information, please visit the Zalman website and refer to "CNPS7000A/B Compatible Socket 462 Motherboards List" link.



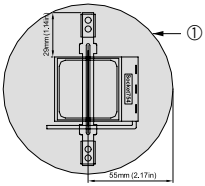
**3) AMD Sempron / AMD64 - Socket 754/939/940**

All CPUs conforming to Socket 754/939/940 platform

***Cautions )***

① No motherboard components with a height greater than 39mm, as well as the PSU, disk drives, VGA card, and RAM should be present within a 55mm radius from the center of the CPU.

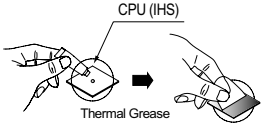
② For more information, please visit the Zalman website and refer to "CNPS7000(A/B) Compatible Socket 754/939/940 Motherboards List" link.




## 7. Installation (Intel Pentium 4 - 478)

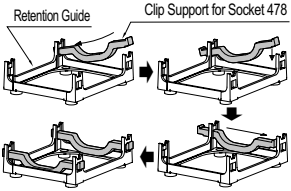
**1) Apply Thermal Grease**

Clean off particles and residue then spread a thin layer of thermal grease on the CPU.



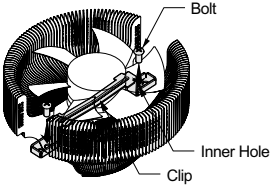

**2) Install Clip Supports for Socket 478**

Install the clip supports for socket 478 on both sides of the retention guide as shown in the diagram.



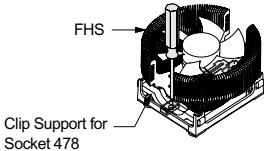

**3) Insert Bolts**

Insert the two bolts into the inner holes of the clip.




**4) Place FHS**

Set the FHS at the center of the CPU. Screw the bolts in slightly, then tighten each bolt a few turns at a time while alternating between the two until the clip supports are completely pressed against the clip.




**5) Connect Power (How to use FAN MATE 2)**

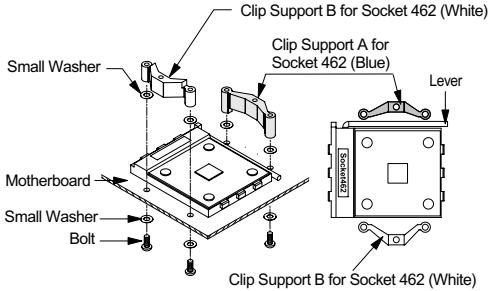
◆ Please refer to FAN MATE 2 Installation and Usage on page 7.

## 8. Installation (AMD Duron / Athlon / Athlon XP / Sempron - 462)

**1) Install Clip Supports for Socket 462**

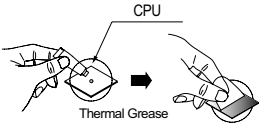
Install the clip supports for socket 462 on the motherboard. **Make sure to place A-type (blue : installed near the lever) and B-type (white) supports at the appropriate location.**

The installation should be done in the order of : bolts > small washers > motherboard > small washers > clip supports (see below).



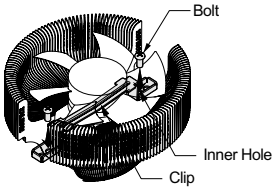

**2) Apply Thermal Grease**

Clean off particles and residue then spread a thin layer of thermal grease on the CPU core (only on the chip's surface that makes contact with the FHS base).



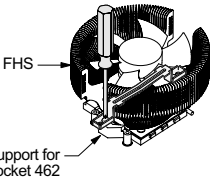

**3) Insert Bolts**

Insert the two bolts into the inner holes of the clip.




**4) Place FHS**

Set the FHS at the center of the CPU. Screw the bolts in slightly, then tighten each bolt a few turns at a time while alternating between the two until the clip supports are completely pressed against the clip.




**5) Connect Power (How to use FAN MATE 2)**

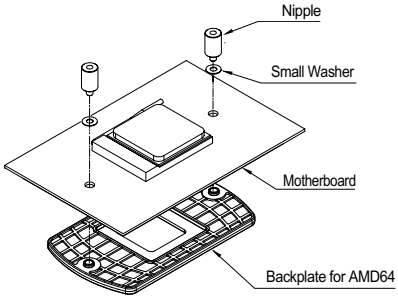
◆ Please refer to FAN MATE 2 Installation and Usage on page 7.

## 9. Installation (AMD Sempron / AMD64 - 754/939/940)

**1) Fasten Nipples**

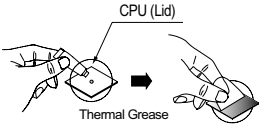
Place a small washer on the motherboard. Then, put a nipple over it and fasten the nipple until the Backplate for AMD64 is firmly attached to the motherboard on the opposite side of the CPU.

* A Retention Guide is not necessary for installing CNPS7000B on Socket 754/939/940.



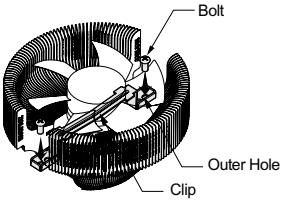

**2) Apply Thermal Grease**

Clean off particles and residue then spread a thin layer of thermal grease on the CPU.



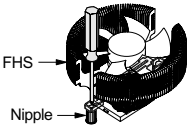

**3) Insert Bolts**

Insert the two bolts into the outer holes of the clip.




**4) Place FHS**

Set the FHS at the center of the CPU. Screw the bolts in slightly, then tighten each bolt a few turns at a time while alternating between the two until the nipples are completely pressed against the clip.

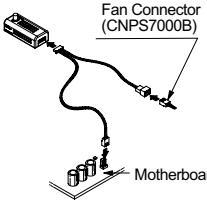



**5) Connect Power (How to use FAN MATE 2)**

◆ Please refer to FAN MATE 2 Installation and Usage on page 7.

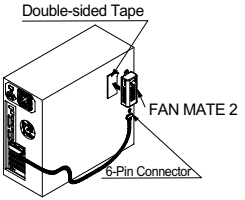
## ※ FAN MATE 2 Installation and Usage

1) Installing FAN MATE 2 on the Inside of the System




Connect the appropriate 3-pin connector on the cable to the motherboard fan header and the CNPS7000B's fan connector.

2) Installing FAN MATE 2 on the Outside of the System




Pull the 6-pin connector out of the system through the back and connect it to FAN MATE 2, which should be installed on the case using the included double-sided tape.

◆ When the speed control knob on FAN MATE 2 is turned fully counter-clockwise, the fan operates in Silent Mode. Turned fully clockwise, it operates in Normal Mode. You can select the desired fan speed by turning the knob.

**Note)** FAN MATE 2 has been specifically designed for the fan of this product. Zalman Tech Co., Ltd. is not responsible for any damage to systems or CPUs caused by using it with other types of fans.

## 10. Notes on Usage

**1) Checking CPU Compatibility**

Please refer to "Compatible CPUs" on page 3 to confirm that your CPU is compatible before using the CPU cooler.

**2) Cautions During Booting**

When booting the computer, it may automatically power down after an alarm sound by a system monitoring program to indicate that the CPU fan is rotating slowly. If this happens, turn the speed control knob fully clockwise to increase the fan speed. Then set 'CPU Fan Detected' to 'Disabled' in the BIOS settings, or set the slowest rotational speed of the CPU fan in the system monitoring program to less than or equal to 1,300rpm.

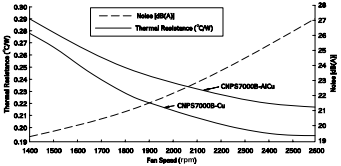
**Note)** Some motherboards do not boot if the rotational speed of the CPU fan is below a certain rpm. If the BIOS settings are updated, Silent Mode can be used. For more information on updating your BIOS, please refer to your motherboard manufacturer's website. Disabling CPU fan speed detection in BIOS settings does not affect computer performance.

**3) Overclocking**

The fan should be set to Normal Mode if Overclocking.

(Zalman Tech Co., Ltd. is not responsible for any damage resulting from CPU Overclocking.)

## 11. Thermal Resistance (℃/W) & Noise (dB) Curve



## 12. Zalman Noise Prevention System

When building a noiseless computer, use Zalman's Noiseless Power Supply, Fanless Northbridge Cooler, Heatpipe HDD Cooler, Noiseless Case Fan, Heatpipe VGA Cooler, and Fan Controller for stable performance and maintain a noiseless environment.

Noiseless Power Supply

Fanless Northbridge Cooler

Heatpipe HDD Cooler

Noiseless Case Fan

Heatpipe VGA Cooler

Fan Controller

## 13. TNN (Totally No Noise) Computer Case

The TNN 500AF is the world's first absolutely **noiseless, anti-dust computer case** for high-end systems that has been developed with Heatpipe Technology, HSC (Heat Source Contact) Power Technology, High Capacity Extrusion Technique, and FMS (Flexible Mounting Structure) Design Technology by ZALMAN Tech Co., Ltd.

The TNN 500AF package includes a high performance aluminum computer case with an absolutely noiseless cooling solution that does not require the use of a fan, making it ideal for:

1. **Digital Audio Workstations (DAW)** in broadcasting, recording, and postproduction studio control rooms.
2. **Multi Media & Storage Servers** for offices, educational facilities, and hotels.
3. **Home Theater and Multi Media Systems** for living rooms.
4. **High Performance Noiseless Workstations & Servers** for SOHO (Small Office Home Office) systems.

For more information, please visit the Zalman website.